

APPENDIX B

MAC Control Bytes (8 bits).

Bits 7-5 in the MAC control bytes are used to specify the frame type. MAC frames are one of two basic types: 1) request, or 2) poll, depending on the state of the R/P bit.

Request frame types.

000	EOD (end-of-data)
001	DATA
010	ENQ (enquiry)
011	RFP (request-for-poll)

Poll frame types.

100	WFP (wait for poll)
101	REJECT
110	CLEAR
111	POLL

Request control byte:

bit 7	R/P	0 = request frame
bit 6	DATA	0 = data frame
bit 5	MORE	1 = middle of bracket (DATA) 0 = end of bracket (EOD) 1 = RFP 0 = ENQ
bit 4	RESET	1 = discard partial bracket
bit 3	PRIORITY	0 = normal, 1 = high
bit 2	SEQ	sequence number, modulo 2
bit 1-0	LAN ID	00, 01, 10 or 11

Poll control byte:

bit 7	R/P	1 = poll frame
bit 6	WAIT	0 = wait for poll
bit 5	MORE	0 = clear
bit 4	reserved	must be zero
bit 3	reserved	must be zero
bit 2	SEQ	sequence number, modulo 2
bit 1-0	LAN ID	00, 01, 10 or 11

Bridge Control Bytes (16 bits).

bit 15-14	Bridge Header Format	00 = multihop, 01 = point-to-point
bit 13	(reserved)	must be zero
bit 12	C/R	0 = command, 1 = response
bit 11	(reserved)	must be zero
bit 10-8	packet type	(see table below)
bit 7	Bridge Params	1 = optional bridge params
bit 6	RPRQ	1 = response packet required
bit 5	(reserved)	must be zero
bit 4-3	Protocol	00 = no data-link data, 01 = LLC data
bit 2-0	(reserved)	must be zero

Bridge Packet Types.

000	Data Packet
001	Data Request Packet
010	Hello Packet
011	Attach Packet
100	Detach Packet
101	Address Resolution Packet
110	Reverse Address Resolution Packet
111	(reserved)

Optional Bridge Parameters - general format.

1-bit end-of-params flag	1 = last optional parm
7-bit parm type	(see table below)
1-byte parm length	length of parm value field in bytes
M-byte parm value	(value or list of values)

Optional Parameters.

Param Type	Param Length	Description
01h	2 bytes	A 2-byte network address.
02h	6 bytes	Long Identifier.
03h	M*2	Decendant List. A list of 2-byte addresses.
04h	N*2	Detached List. A list of 2-byte addresses.
05h	P*2	Pending Message List. A list of 2-byte addresses.
06h	1 byte	Distance (cost) from the root.
07h	0 bytes	Well-known alias.
08h	R bytes	Forward List. A list of 2-byte addresses.
09h	1 byte	Load Indicator. An indication of the channel load based on frame frequency.
0Ah	S bytes	Well-known alias of the root.
0Bh	6 bytes	Long identifier of the root.

Bridge Packet Formats.

Data Packet Format (Type 000).

MAC Header
Bridging Header
LLC Header
LLC Data

Data Request Packet Format (Type 001).

MAC Header
Bridging Header

Hello Packet Format (Type 010).

MAC Header	
Bridging Header	
Cost-to-root	1 byte (0xFF = infinity)
Decendant Count	1 byte
Next Hello	1 byte
bit 7-2 seed bit 1-0 hello offset	6-bit randomization seed. 00-10 = offset in slots from calculated hello time. 11 = hello time not calculated.
Priority bit 7-6 reserved bit 5-3 user priority bit 2-0 device priority	1 byte (must be zero) 000 = no priority 111 = highest priority 000 = no priority 111 = highest priority
Optional fields - 6-byte Root ID - Pending Message List - Decendant List - Detached List - Load Indicator	N bytes

Attach Packet Format (Type 011).

MAC Header	
Bridging Header	
Attach Params	1 byte
bit 7-3 reserved bit 2-0 hello save count	(must be zero) 000-110 = save a message 0 to 6 hello times for the attaching child.
Optional Attach Params - decendant list - LLC message unit	N bytes

Detach Packet Format (Type 100).

MAC Header	
Bridging Header	
Optional Detach Params - decendant list - forward list	N bytes

Address Resolution Packet Format (Type 101).*

MAC Header	
Bridging Header	
ARP Operation	1 byte
bit 7-4 (reserved)	must be zero
bit 3-0 reason code	0 = ok, other = error code
Network Address	2 bytes
Long ID length	1 byte
Long ID type	1 byte
Long ID	N bytes

*The Long ID can be a 6-byte identifier or an Alias. The address server will set the network address field to the network address of the associated node. If the Long ID (or Alias) cannot be found the network address field will be set to all 1's.

Reverse Address Resolution Packet Format (Type 110).*

MAC Header	
Bridging Header	
RARP Operation	1 byte
bit 7 New Alias	1 = replace existing Alias
bit 6 New Long ID	1 = replace existing Long ID
bit 5 (reserved)	must be zero
bit 3-0 reason code	0 = ok, other = error code
Network address	2 bytes
Long ID length (6)	1 byte
Long ID type (02h)	1 byte
Long ID	N bytes
Alias length	1 byte
Alias type (07h)	1 byte
Alias	N bytes

*The requesting node must set the Long ID field and/or the Alias field. The source bridge address must be set to the source node type and a node ID of all 1's. The address server will set the network address field to the next available 16-bit address. If an address is not available, the field will be set to all 1's.